US-PAT-NO: 6295197
DOCUMENT-IDENTIFIER: US 6295197 B1

TITLE: Wireless communication apparatus

DATE-ISSUED: September 25, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Watts, Jr.; La Vaughn	Austin	TX	N/A	N/A
F. Scholder; Erica	Austin	TX	N/A	N/A

US-CL-CURRENT: 361/683,312/223.2 ,343/702 ,361/727

ABSTRACT:
A control module includes a control module having a body and a jack portion extending from the body for being received in a mating receptacle. The jack portion carries a plurality of contacts. A wireless communication portion is attached to the body. A switch portion is attached to the body. The switch portion is electrically connected to at least a portion of the contacts. A single receptacle assembly can be used to separately interconnect a plurality of types of communication devices to an electronic device in a space efficient and cost-effective manner.

21 Claims, 13 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

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DEPR:
Referring now to FIG. 2, the communication module 15 includes a **wireless** communication device 20 such as a radio frequency (RF) communication module, a network interface device 22 such as a network interface controller (NIC) card, a modem device 24 and a **connector** 26 mounted on a printed circuit substrate 28. A lead 30 is electrically connected between the **connector** 26 and the **wireless** communication device 20. The printed circuit substrates 18, 28 are preferably printed circuit boards including a plurality of conductive traces 30

for
routing signals and power to the various components mounted thereon. Each one
of the traces 30 may represent more than one trace extending between two system
components. In some cases, for clarity, only one of the traces 30 is shown to
extend between two or more system components. The printed circuit substrate 28
includes an edge connector portion 32 for being connected to a connector 34,
such as a **PCI** bus connector, of the printed circuit substrate 18.

DEPR:
The **connector** 44, preferably a coaxial-type antenna **connector**, serves as a
wireless communication portion of the receptacle assembly 10. The controlled
impedance interface 17 is attached at a first end to the connector 44. The
controlled impedance interface 17 is attached at a second end to a plug 56.
The plug 56 is configured to be attached to a connector such as the connector
26, FIG. 2.

DEPR:
When the control module 19 is mounted on the receptacle assembly 10, the switch
portion 63 of the control module 19 is electrically connected through the
circuit routing device 55 to a voltage control device 65. When the switch
portion 63 is in a first position A, such as an on position, power from the
connector 34 is supplied through the voltage control device 65 to the
wireless
communication device 20, permitting operation of the **wireless** communication
device 20. When the switch portion 63 is moved to a second position B, such as
an off position, power is not supplied through the voltage control device to
the wireless communication device 20, inhibiting operation of the wireless
communication device 20. Transistors and relays are examples of commercially
available devices suitable for use as the voltage control device 65.

DEPR:
A connector 76, FIG. 8, is attached to the control module 19. The connector 76
is electrically connected to the antenna 67. The connector 76 is positioned on
the jack portion 57 such that it engages the mating connector 44 of the
receptacle assembly when the jack portion 57 is mounted in the

receptacle 38.
A **connector** 78 extends from the second surface 72 of the control module 19 and
is operably connected to the **connector** 76 for permitting an auxiliary antenna
(not shown) to be connected through the control module 19 to the **wireless**
communication device 20.

CLPR:
6. The control module of claim 1 wherein the **wireless** communication portion
includes a first antenna **connector**.

CLPR:
11. The control module of claim 6 wherein the **wireless** communication portion
includes a substantially integral antenna operably connected to the first
antenna **connector**.

CLPR:
20. The communication apparatus of claim 15 wherein the control module
includes a **wireless** communication portion, the **wireless** communication portion
being operably connected to the antenna **connector** when the control module is
attached to the receptacle assembly.

L Number	Hits	Search Text	DB	Time stamp
1	50	modular adj2 bay$1	USPAT; US-PGPUB	2002/03/10 17:06
4	17	mini adj1 pci$1	USPAT; US-PGPUB	2002/03/10 17:15
7	0	(mini adj1 pci$1) and (modular adj2 bay$1)	USPAT; US-PGPUB	2002/03/10 17:07
10	11	connector$1 and (mini adj1 pci$1)	USPAT; US-PGPUB	2002/03/10 17:15
13	11	connector$1 same (mini adj1 pci$1)	USPAT; US-PGPUB	2002/03/10 17:10
16	1	mini adj1 pci$1	EPO; JPO; DERWENT; IBM_TDB	2002/03/10 17:14
21	0	connector$1 and (mini adj1 pci$1)	EPO; JPO; DERWENT; IBM_TDB	2002/03/10 17:15
26	3	(modular adj2 bay$1) same pci$1	USPAT; US-PGPUB	2002/03/10 17:16

09/353,938

PGPUB-DOCUMENT-NUMBER: 20010012726
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010012726 A1

TITLE: STACKED MODULE **CONNECTOR**

PUBLICATION-DATE: August 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
O'NEAL, SEAN P.	ROUND ROCK	TX	US	
LIAO, REYNOLD L.	AUSTIN	TX	US	
SWAMY, DEEPAK	AUSTIN	TX	US	

US-CL-CURRENT: 439/540.1,439/74

ABSTRACT:

A **connector** suitable for providing an electrical connection between a plurality of modules with card edge connections and the motherboard in a stacked configuration is disclosed. This **connector** includes a plurality of housings, each containing a socket with contacts suitable for providing an electrical contact between a module and the motherboard. These housings are stacked in a direction normal to the surface on which the **connector** is mounted, such as the motherboard. These housings can also be offset with respect to each other such that the modules are secured to the **connector** in a stacked and stepped configuration.

---------- KWIC ---------

TTL:
STACKED MODULE **CONNECTOR**

ABTX:
A **connector** suitable for providing an electrical connection between a plurality of modules with card edge connections and the motherboard in a stacked configuration is disclosed. This **connector** includes a plurality of housings, each containing a socket with contacts suitable for providing an electrical contact between a module and the motherboard. These housings are stacked in a direction normal to the surface on which the **connector** is mounted, such as the

motherboard. These housings can also be offset with respect to each other such
that the modules are secured to the **connector** in a stacked and stepped configuration.

BSTX:
[0001] The present invention relates in general to the field of electrical
connectors and more specifically to an electrical **connector** for establishing a
connection between a motherboard of a computer system and two or more electrical or electronic modules.

BSTX:
[0005] Additional difficulties in locating the memory slots on the motherboard
arise because of the spacing requirements of the next generation memory technologies. One example of a next generation memory module is designed and
manufactured by Rambus Inc. of Mountain View, Calif. It is a requirement of
Rambus's SoRIMM (Small Outline Rambus In-Line Memory Module) that the pin to
pin distance between the memory slots be less than 0.511. Due to the structure
of the Rambus SoRIMM, the minimum space between two memory slots is limited by
the width of the SoRIMM itself, which is approximately 1.25". Overcoming these
two requirements requires the staggering of the placement of the **connectors**,
which further exacerbates the space limitation on the surface of the motherboard.

BSTX:
[0006] Desktop computers use **connectors** that hold the memory modules perpendicular to the motherboard or at a large angle. Portable computers, even
those intended to serve as desktop replacements, are not tall enough to accommodate this arrangement. For example, while up to three RIMM modules may
be used on a desktop computer's motherboard, portable computers have not added
a third memory slot because of space constraints.

BSTX:
[0009] In accordance with teachings of the present disclosure, a system and
method are described for a **connector** that allows two or more modules to be
stacked parallel to each other. The modules could be offset slightly to allow
better access to the modules closer to the motherboard and a visual reference
of which module is installed in the slots. The **connector** could consist of two

or more modules. For the case of three modules and the motherboard being
offset from the plastics, it may be preferable to stack all three with one
connector or use a stacked **connector** next to a standard single **connector**. The
connector should still be Surface Mounted Technology (SMT) with longer tabs for
the more distant modules. Note that many portable computers (particularly
desktop replacements) are being designed with internal modules, such as compact
disc/floppy disk drives, that typically are placed under the motherboard. This
will push the motherboard away from the base plastics by at least the thickness
of the compact disc/floppy disk drive. This distance is generally at least
12.7 mm and is not currently being exploited. For example, a SoDIMM or SoRIMM
memory module is about 4 mm, leaving unused space below the memory module. The
stacked module **connector** utilizes this otherwise wasted space to effectively
increase the available system memory.

DRTX:
[0011] FIG. 1 is a perspective view of the **connector** and terminals of the
present invention.

DRTX:
[0012] FIG. 2 is a perspective view of the **connector** and terminals of the
present invention with a spacer.

DRTX:
[0013] FIG. 3 is a perspective view of the **connector** and terminals of the
present invention, wherein the **connector** employs latches to secure the modules.

DRTX:
[0014] FIG. 4 is a perspective view of the **connector** and terminals of the
present invention wherein the **connector** employs latches and a spacer.

DRTX:
[0015] FIG. 5 is a front view of the **connector** and terminals of the present
invention wherein the top housing is wider than the bottom housing.

DETX:
[0017] Shown in FIG. 1 is **connector** 10 for providing a electrical connection

between two modules, 50 and 60, to a motherboard 20 on which the **connector** 10 is mounted. This **connector** 10 comprises housings 70 and 80 which are disposed in a direction normal to the motherboard 20. In other words, housings 70 and 80 are configured in a stacked position on the motherboard 20. Housings 70 and 80 contain slots 120 and 130 respectively. However, the present invention need not be limited to two housings. Slots 120 and 130 are intended to provide an electrical connection for modules 50 and 60, respectively, to the motherboard 20 Housings 70 and 80 are preferably offset with respect to each other by selected distance D. This offset gives the module **connector** a stacked and stepped configuration. Where the offset distance D is zero, larger modules located in the top slots will obscure smaller modules located in the bottom slots. In addition, housings 70 and 80 may be aligned at an acute angle .theta. with respect to the motherboard 20. This acute angle may be zero degrees. Preferably, this acute angle is zero, resulting in modules 50 and 60 being parallel to the motherboard 20.

DETX:
[0019] FIG. 3 discloses an alternative embodiment of the present invention wherein the **connector** employs a latch to secure the modules. Module 50 is secured to socket 120 by latches 35 and 30. Module 60 is secured to socket 130 by latches 45 and 40. The present invention does not require latches or that the latches be a part of the **connector** 10. For example, the latch may be attached to the motherboard itself, rather than the **connector**. FIG. 4 discloses another embodiment of the invention, wherein the **connector** employs latches and a spacer.

DETX:
[0020] FIG. 5 illustrates that the width W1 of housing 70 need not be equal to the width W2 of housing 90 since the invention is not limited to **connectors** for providing electrical connections between the motherboard and modules of the same type or size. Where housing 70 has a width W1 which is greater than the width W2 for housing 90, a module (not shown) can be placed in slot 140

with
greater ease since latches 30 and 35 are not obstructing physical access to
slot 140.

DETX:
[0021] The present invention need not be limited to SoDIMM or SoRIMM memory
modules. For example, other modules with card edge connections, such as those
utilizing the **mini-PCI** type III standard, may be stacked. Other types of
modules suitable for use with the present invention include video, video
capture, audio, modem, network, 802.11, MPEG decoders and wireless
communication devices such as BLUETOOTH. Since the modules need not be the
same size, the module **connector** can be used to stack different types of
modules. For example, a SoRIMM memory module may be placed in one socket,
while a **mini-PCI** type module may be placed in another socket.

DETX:
[0023] Furthermore, by providing for an offset in the manner in which the
modules are stacked, the present invention possesses several additional
advantages over existing **connectors**. One advantage is that the offset provides
greater physical access to the modules for the purposes of inserting or
removing the modules from the **connector**. In the case of a **connector** where the
modules are completely overlapping, it would be more difficult to insert or
remove modules which are located closer to the motherboard. Another benefit is
that the offset allows for improved visual confirmation of the location and
presence of modules located closer to the motherboard. If the modules are
completely overlapping, some modules may be obscured. The offset also provides
for better thermal properties by allowing for heat dissipation. Heat may
become trapped between modules where the **connector** provides for a stacked and
completely overlapping configuration. The offset also serves to minimize the
trace length problem. In the case where there is no offset, the modules are
located directly on top of one another and, as a result, the contacts for the
top module must bend around the lower modules in order to connect with the
motherboard. Where there is an offset, the contacts can have a direct path to
the motherboard which minimizes the required pin length.

CLTX:
1. A module **connector** comprising: an interface for securing the module **connector** to a socket of a motherboard; and a plurality of housings, each containing a slot, wherein the slots include electrical contacts, and are each adapted to receive a module and provide a connection from the module to the motherboard.

CLTX:
2. The module **connector** of claim 1, wherein the housings are disposed in a direction normal to the motherboard.

CLTX:
3. The module **connector** of claim 1, wherein the slots provide a connection for the modules to the motherboard at an acute angle.

CLTX:
4. The module **connector** of claim 3, wherein the acute angle is approximately zero.

CLTX:
5. The module **connector** of claim 1, wherein the housings are offset at a selected distance with respect to each other.

CLTX:
6. The module **connector** of claim 1, further comprising one or more latches for securing a plurality of modules to the module **connector**.

CLTX:
7. The module **connector** of claim 1, wherein a upper housing has a greater width than a lower housing.

CLTX:
8. A module **connector** comprising: an interface for securing the module **connector** to a socket of a motherboard; a latching mechanism for securing the connection of a plurality of modules to the module **connector**; a plurality of housings, wherein the housings are disposed in a direction normal to the motherboard, and are offset at a selected distance with respect to each other; and a plurality of slots, each located in a housing, wherein the slots include electrical contacts, and provide a connection for the modules to the motherboard at a selected acute angle.

CLTX:
9. The module **connector** of claim 8, wherein the selected acute angle is zero.

CLTX:
10. The module **connector** of claim 8, wherein the housings are vertically spaced from each other, and one or more heat sinks are placed between the slots.

CLTX:
11. The module **connector** of claim 8, wherein the housings are vertically spaced from each other, and one or more vibration dampers are placed between the slots.

CLTX:
12. The module **connector** of claim 8, wherein the module **connector** comprises a base portion and a top portion, wherein the top portion has a greater width in a direction parallel to the motherboard than the base portion.

CLTX:
13. The module **connector** of claim 8, further comprising one or more latches for securing a plurality of modules to the module **connector**.

CLTX:
14. A computer system comprising: a motherboard; and a module **connector,** wherein the module **connector** comprises: an interface for securing the module **connector** to a socket of the motherboard; and a plurality of slots, wherein the slots include electrical contacts, and are each sized to receive a module and provide a connection from the module to the motherboard.

CLTX:
15. The computer system of claim 14, wherein each slot of the module **connector** is contained in a housing and the housings are disposed in a direction normal to the motherboard.

CLTX:
16. The computer system of claim 14, wherein the slots of the module **connector** provide a connection for the modules to the motherboard at an acute angle.

CLTX:

18. The computer system of claim 14, wherein each slot of the module **connector** is contained in a housing and the housings are offset with respect to each other.

CLTX:
19. The computer system of claim 14, wherein the module **connector** further comprises one or more latches for securing a plurality of modules to the module **connector**.

CLTX:
20. The computer system of claim 14, wherein the module **connector** comprises a base portion and a top portion, wherein the top portion has a greater width in a direction parallel to the motherboard than the base portion.

CLTX:
21. A computer system comprising: a motherboard; and a module **connector** comprising: an interface for securing the module **connector** to a socket of the motherboard; and a plurality of slots, wherein the slots include electrical contacts, and are disposed in a direction normal to the motherboard, and provide a connection for the modules to the motherboard at a selected acute angle, and are offset at a selected distance with respect to each other.

CLTX:
23. The computer system of claim 21, wherein each slot of the module **connector** is contained in a housing and the housings are vertically spaced from each other, and one or more heat sinks are placed between the housings.

CLTX:
24. The computer system of claim 21, wherein each slot of the module **connector** is contained in a housing and the housings are vertically spaced from each other, and one or more vibration dampers are placed between the housings.

CLTX:
25. The computer system of claim 21, wherein the module **connector** further comprises a base portion and a top portion, wherein the top portion has a greater width in a direction parallel to the motherboard than the base portion.

CLTX:
26. The computer system of claim 21, wherein the module **connector** further
comprises one or more latches for securing a plurality of modules to the module
connector.

PGPUB-DOCUMENT-NUMBER: 20010012726
PGPUB-FILING-TYPE: new
DOCUMENT-IDENTIFIER: US 20010012726 A1

TITLE: STACKED MODULE CONNECTOR

PUBLICATION-DATE: August 9, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	COUNTRY	RULE-47
O'NEAL, SEAN P.	ROUND ROCK	TX	US	
LIAO, REYNOLD L.	AUSTIN	TX	US	
SWAMY, DEEPAK	AUSTIN	TX	US	

US-CL-CURRENT: 439/540.1,439/74

ABSTRACT:

A connector suitable for providing an electrical connection between a plurality of modules with card edge connections and the motherboard in a stacked configuration is disclosed. This connector includes a plurality of housings, each containing a socket with contacts suitable for providing an electrical contact between a module and the motherboard. These housings are stacked in a direction normal to the surface on which the connector is mounted, such as the motherboard. These housings can also be offset with respect to each other such that the modules are secured to the connector in a stacked and stepped configuration.

---------- KWIC ---------

DETX:
[0021] The present invention need not be limited to SoDIMM or SoRIMM memory modules. For example, other modules with card edge connections, such as those utilizing the **mini-PCI** type III standard, may be stacked. Other types of modules suitable for use with the present invention include video, video capture, audio, modem, network, 802.11, MPEG decoders and wireless communication devices such as BLUETOOTH. Since the modules need not be the same size, the module **connector** can be used to stack different types of modules. For example, a SoRIMM memory module may be placed in one socket,

while a **mini-PCI** type module may be placed in another socket.

US-PAT-NO: 6336830
DOCUMENT-IDENTIFIER: US 6336830 B1

TITLE: Modular connector assembly for an electronic appliance

DATE-ISSUED: January 8, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lee; Chuan-Yuan	Taipei	N/A	N/A	TWX

US-CL-CURRENT: 439/676,439/395 ,439/76.1

ABSTRACT:
A modular connector assembly includes an insulating connector housing which is adapted to be mounted on a main circuit board of an electronic appliance that has an electronic component on the main circuit board. The connector housing is formed with a connector mating hole, and has a partition wall for defining a front chamber communicated with the connector mating hole, and a rear chamber. The partition wall cooperates with a bottom wall of the connector housing to define a channel for communicating the front and rear chambers. The bottom wall is formed with a plurality of terminal retaining grooves within the connector housing. A plurality of contact terminals have elongated main portions extending through the channel and retained in the retaining grooves. Each contact terminal has a resilient contact portion disposed in the front chamber and a cable connecting portion disposed in the rear chamber. A ribbon cable extends into the rear chamber, and has one end connected electrically to the cable connecting portions of the contact terminals and the other end adapted to be connected to the electronic component.

4 Claims, 4 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 4

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BSPR:
FIG. 1 illustrates the connection between a conventional RJ11/RJ45 electrical

connector 3 and a mini peripheral component interconnect (**mini PCI**) 2 provided
on a main circuit board 1. The electrical **connector** 3 is suitable for mating
with a complementary electrical **connector** 4, and is mounted on the main circuit
board 1 adjacent to an edge portion of the latter by means of known soldering
or surface mounting (SMT) techniques. The electrical **connector** 3 and the **mini**
PCI 2 have contact terminals 31, 21 inserted through the main circuit board 1.
The main circuit board 1 is provided with a printed circuit 11 for
interconnecting electrically the contact terminals 21, 31 of the **mini PCI** 2 and
the electrical **connector** 3.

BSPR:
However, to form the printed circuit 11, a layout of the circuit should be
designed beforehand, and the main circuit board 1 should undergo several
treatment steps which include, for example, chemical etching. The contact
terminals 21, 31 of the **mini PCI** 2 and the electrical **connector** 3 are
subsequently welded to the main circuit board 1 to ensure electrical connection
between the contact terminals 21, 31 and the printed circuit 11. These
complicate the manufacturing process of the electronic appliance. Moreover, as
the printed circuit 11 is exposed from the circuit board 1, the printed circuit
11 may possibly cause static discharge and electromagnetic interference within
the electronic appliance to adversely affect the functions of other electronic
components in the electronic appliance.

US-PAT-NO: 6270369
DOCUMENT-IDENTIFIER: US 6270369 B1

TITLE: Sub-card board connector, sub-card board, modem sub-card, and a computer having this connector

DATE-ISSUED: August 7, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Kato; Katsutoshi	Tokyo-to	N/A	N/A	JPX
Fujii; Kazuo	Yokohama	N/A	N/A	JPX
Ohtani; Tetsuya	Yokohama	N/A	N/A	JPX
Mori; Shigeki	Machida	N/A	N/A	JPX
Studwell; Thomas	Chapel Hill	NC	N/A	N/A

US-CL-CURRENT: 439/326,439/924.1

ABSTRACT:
It is to provide a sub-card board connector capable of secure grounding and also easy placement and removal of a card, a sub-card board, a modem sub-card, and a computer having this connector. In sub-card board connector 1 of the present invention, (1) first GND connections 11-1, 11-2 are placed on a surface facing the sub-card board 2 of the latches 7-1, 7-2 and when connecting the sub-card board to the connector, the sub-card board is grounded by having the first GND connections contact the first electrodes provided on the sub-card board; and/or (2) second GND connections 12-1, 12-2 are placed facing the sub-card board on a surface opposite to the latches of the latch supporting parts 6-1, 6-2 and when connecting the sub-card board to the connector, the sub-card board is grounded by having the second GND connections contact the second electrodes provided on the sub-card board. And this connector is incorporated in a computer.

13 Claims, 8 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 4

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DEPR:

Sub-card board 2 used for connecting with sub-card board **connector** 1 of the present invention is characterized by, in a state of sub-card board 2 placed on **connector** 1 as mentioned above, providing first electrodes 14-1, 14-2 in positions in contact with first GND connections 11-1, 11-2 and/or providing second electrodes 14-1, 14-2 in positions in contact with second GND connections 12-1, 12-2. In addition, sub-card board **connector** 1 of the present invention should preferably be used as a modem sub-card in particular since it can be grounded around the board to have an electromagnetic-wave-resistant structure. Moreover, sub-card board **connector** 1 of the present invention can also be used suitably as a **connector of the mini-PCI** specifications. Furthermore, a computer configured to connect a sub-card board by utilizing sub-card board **connector** 1 of the present invention can have a structure resistant to electromagnetic waves from **connector** 1 and sub-card board 2.

US-PAT-NO: 6215656
DOCUMENT-IDENTIFIER: US 6215656 B1

TITLE: Method and apparatus for factory or user configurable external connectors

DATE-ISSUED: April 10, 2001

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
O'Neal; Sean P.	Round Rock	TX	N/A	N/A
Liao; Reynold L.	Austin	TX	N/A	N/A
White; Mark A.	Austin	TX	N/A	N/A

US-CL-CURRENT: 361/686,361/683 ,361/748

ABSTRACT:
An apparatus and method is provided for installing and connecting one or more expansion boards in a computer system while the computer system is being manufactured as well as when a user upgrades or reconfigures the computer system. An expansion board bay for receiving the expansion board is located within the computer system, typically on a circuit board such as the motherboard. A connector module that is separate from the expansion board and the expansion board bay is positioned within the computer system. The connector module is positioned to provide easy external access to a contact portion of the connector module, thereby allowing a user to connect an external data signal line to the connector module. A connector cable operably connects the expansion board with the connector module to establish communication between the data processor and the external data line through the expansion board.

15 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

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BSPR:
Typical expansion boards that may be placed within a computer include additional microprocessors, additional memory, fax/modem capability, network interface, television tuners, sound cards, global positioning system (GPS)

receivers, and graphics cards. In portable computers, hardware components such as these are packaged in portable computer memory card international association ("PCMCIA") cards and miniature peripheral component interface (**mini-PCI**) cards, both of which are small expansion modules each roughly the size and shape of a credit card. These cards allow the user to expand the processing or interfacing capabilities of a portable computer with the insertion of a single card into the computer and interfacing it with the motherboard or other circuit board, in the computer. PCMCIA cards have **connectors** built into them whereas **mini-PCI** cards do not. For this reason, PCMCIA cards arc more expensive and computer system manufacturers are migrating toward using **mini-PCI** cards instead of PCMCIA cards. It is therefore desirable to have an adaptable system of **connectors** and cables that may be used with a variety of miniPCI cards.

CLIPPEDIMAGE= US005826048A
PUB-NO: US005826048A
DOCUMENT-IDENTIFIER: US 5826048 A
TITLE: PCI bus with reduced number of signals

PUBN-DATE: October 20, 1998

INVENTOR-INFORMATION:

NAME	COUNTRY
DEMPSEY, MORGAN JAMES	US
JAYAVANT, RAJEEV	US

ASSIGNEE-INFORMATION:

NAME	COUNTRY
VLSI TECHNOLOGY INC	US

APPL-NO: US79030397
APPL-DATE: January 31, 1997

PRIORITY-DATA: US79030397A (January 31, 1997)
INT-CL (IPC): G06F013/00
EUR-CL (EPC): G06F013/40

ABSTRACT:
A **Mini-PCI** (MPCI) interface, and associated circuits and methods are provided for connecting a Peripheral Component Interconnect (PCI) device to one or more external devices. The MPCI interface, circuits and methods provide for a substantial if not full implementation of a PCI Local Bus without requiring the standard number of pins, traces, or signals. The MPCI interface includes a PCI/MPCI bridge connected between a PCI bus and to up to eight external devices in the form of MPCI devices and linear memory devices. The PCI/MPCI bridge is capable of receiving an incoming PCI transaction and multiplexing some of its signals together to create a corresponding incoming MPCI transaction. This incoming MPCI transaction may then be passed over an MPCI bus, having fewer lines and optimally operating at a higher frequency, the external devices. The process is reversed for outgoing transactions, i.e., the MPCI transactions are de-multiplexed to create PCI transactions. Additionally, the MPCI interface may also be configured to provide for direct access to linearly addressed memory devices without adding a PCI interface to the external

interface. The
invention may be implemented through integrated circuitry and/or computer
implemented instructions, and may be included within a personal computer.

US-PAT-NO: 6115765
DOCUMENT-IDENTIFIER: US 6115765 A

TITLE: Method of swapping auxiliary storage devices using a suspend mode

DATE-ISSUED: September 5, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Lee; Kil-Moo	Seoul	N/A	N/A	KRX

US-CL-CURRENT: 710/302

ABSTRACT:
A method of swapping auxiliary storage devices in a computer using a suspend mode includes the steps of: determining if a suspend mode command has been given, and, if so, determining if a specific device is mounted a bay of the computer; and setting an event flag if a specific device is mounted in the bay of the computer, and after storing an ID of the specific device, executing the suspend mode, or storing a default value if a specific device has not been mounted in the bay of the computer and executing the suspend mode. The suspend mode enables the swapping of auxiliary storage devices in the bay of the computer while maintaining the computer in an ON state and temporarily suspending all programs in use.

3 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 5

---------- KWIC ---------

BSPR:
The following patents each disclose features in common with the present invention but do not teach or suggest the specifically recited method of swapping auxiliary storage devices using a suspend mode in accordance with the present invention: U.S. Pat. No. 5,671,368 to Chan et al., entitled PC Card Controller Circuit To Detect Exchange Of PC Cards While In Suspend Mode, U.S. Pat. No. 5,526,493 to Shu, entitled Docking Detection And Suspend Circuit For Portable Computer/Expansion Chassis Docking System, U.S. Pat. No.

5,664,119
to Jeffries et al., entitled Local Proactive Hot Swap
Request/Acknowledge
System, U.S. Pat. No. 5,793,987 to Quackenbush et al., entitled Hot
Plug Port
Adapter With Separate **PCI** Local Bus And Auxiliary Bus, U.S. Pat. No.
5,579,491 to Jeffries et al., entitled Local Proactive Hot Swap
Request/Acknowledge System, U.S. Pat. No. 5,805,834 to McKinley et
al.,
entitled Hot Reconfigurable Parallel Bus Bridging Circuit, U.S. Pat.
No.
5,822,547 to Boesch et al, entitled Method And Apparatus For Providing
A
Portable Computer With Hot Pluggable **Modular Bays**, U.S. Pat. No.
5,758,103 to
Oh, entitled Circuit For Replacing A Peripheral Device Of A Computer
System And
Method Therefor, U.S. Pat. No. 5,781,798 to Beatty et al, entitled
Method And
Apparatus For Providing Hot Swapping Capability In A Computer System
With
Static Peripheral Driver Software, U.S. Pat. No. 5,555,510 to
Verseput et
al., entitled Automatic Computer Card Insertion And Removal Algorithm,
U.S.
Pat. No. 4,999,787 to McNally et al., entitled Hot Extraction And
Insertion Of
Logic Boards In An On-Line Communication System, U.S. Pat. No.
5,598,539 to
Gephardt et al., entitled Apparatus And Method For Achieving Hot
Docking
Capabilities For A Dockable Computer System, and U.S. Pat. No.
5,632,020 to
Gephardt et al., entitled System For Docking A Portable Computer To A
Host
Computer Without Suspending Processor Operation By A Docking Agent
Driving The
Bus Inactive During Docking.

US-PAT-NO: 5973920
DOCUMENT-IDENTIFIER: US 5973920 A

TITLE: Heat frame for portable computer

DATE-ISSUED: October 26, 1999

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Altic; James E.	Belton	TX	N/A	N/A
Karl; Rex A.	Temple	TX	N/A	N/A
Vinson; Samuel L.	Temple	TX	N/A	N/A

US-CL-CURRENT: 361/687,165/80.2 ,361/707

ABSTRACT:
A heat frame (10) incorporates a mounting frame for mounting multiple circuit boards (38), a heat sink (24), a connector bracket (34), and hinge mounts (12) into one integral component. Heat removed by the heat sink (24) is transferred over the entire heat frame (10) with the aid of a heat pipe (44). Fins 17 dissipate heat through the housing of computer (50) under the display assembly (74). The integral nature of the heat frame (10) reduces assembly and testing costs, as well as providing superior heat transfer and EMI/RFI grounding.

14 Claims, 6 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 6

---------- KWIC ---------

DEPR:
In the illustrated embodiment, the top board 38a contains the microprocessor, memory, graphics controller and **PCI** bus circuitry. PC Card peripheral slot 43 is also connected to the top board 38a. Bottom board 38b contains the power supply circuitry, BIOS (basic input/output system), modem and **modular bay** circuitry. Bus/VGA board 38c provides connectors for the docking station and an external display. The allocation of functions between boards is a matter of design preference and the functions of the various boards mounted to the heat

frame 10 could vary from that described herein.

US-PAT-NO: 5822547
DOCUMENT-IDENTIFIER: US 5822547 A

TITLE: Method and apparatus for providing a portable computer with hot pluggable modular bays

DATE-ISSUED: October 13, 1998

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Boesch; Shannon C.	Georgetown	TX	N/A	N/A
Haley; Charles L.	Temple	TX	N/A	N/A

US-CL-CURRENT: 710/302,710/107 ,710/48

ABSTRACT:
A computer system 10, such as a notebook computer, uses a modular bay 12 to receive optional devices 14. Buffer circuits 36 selectively isolate the device 14 in the modular bay from respective buses 34. An SMI handler, or similar executable routine, recognizes events which affect the modular bay 12 (such as insertion or removal of a device 14 from the modular bay 12), and performs the necessary routines to re-enumerate the system so that the device 14 is properly connected to its bus 34 and that the system software is aware of the hardware connected to computer 10.

9 Claims, 5 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 3

---------- KWIC ---------

DEPR:
Many notebook systems provide for a docking station. A docking station allows connection of the computer 10 to devices which may not be suitable for portable use. For example, the docking station may provide an interface and a physical connection to a local area network. It may also provide standard bus slots (such as Industry Standard Architecture (ISA) or Peripheral Connect Interface (**PCI**) slots) for the user to add peripheral cards, such as advanced video cards or sound cards. The system designer may chose to disable the **modular**

bay (by
disabling all buffers 36 and re-enumerating the system) while the computer 10
is connected to a docking station.

US-PAT-NO: 5822547
DOCUMENT-IDENTIFIER: US 5822547 A

TITLE: Method and apparatus for providing a portable computer with hot pluggable modular bays

DATE-ISSUED: October 13, 1998

INVENTOR-INFORMATION:

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Boesch; Shannon C.	Georgetown	TX	N/A	N/A
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Exemplary Claim Number: 1
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Linux Journal January 1997
How to Design Linux Workstation: These days, it's possible to put together a decent personal Unix Platform for less than $2,000 US

2 BIST TPG for faults in system backplanes 77%
Chen-Huan Chiang , Sandeep K. Gupta
Proceedings of the 1997 IEEE/ACM international conference on Computer-aided design November 1997

3 The SGI Origin 77%
James Laudon , Daniel Lenoski
Proceedings of the 24th international symposium on Computer architecture June 1997

US-PAT-NO: 6067583
DOCUMENT-IDENTIFIER: US 6067583 A

TITLE: Modular, reconfigurable components methods for wireless data transfer
between a computer and a communications system

DATE-ISSUED: May 23, 2000

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Gilbert; Timothy G.	Vermillion	SD	N/A	N/A

US-CL-CURRENT: 710/8,455/1 ,455/42 ,455/557 ,710/14 ,710/20

ABSTRACT:
A wired modem normally plugs directly into a computer and connects to a
telephone system by wired connection to a wall jack. This same modem can be
used in a wireless configuration by plugging it into a single-module base
station unit located near the wall jack and containing a baseband-to-wireless
transceiver. A single module remote station plugs into the computer in place
of the modem, and contains another baseband-to-wireless transceiver for
communicating wireless data with the base station. The base and remote
stations duplicate very little of the functionality performed by the modem,
making the modem easily replaceable in either wired or wireless
configurations.

19 Claims, 10 Drawing figures
Exemplary Claim Number: 6
Number of Drawing Sheets: 7

---------- KWIC ---------

DEPR:
FIG. 1 shows a block diagram of a computer system 100 serving as an
environment
for the present invention. In this embodiment, processor 102, system
controller 112, cache 114, and data-path chip 118 are each coupled to
host bus
110. Processor 102 is a microprocessor such as a Pentium.RTM., Pentium
II.RTM.
or other suitable microprocessor. Cache 114 provides high-speed
local-memory
data (in one embodiment, for example, 512 kB of data) for processor
102, and is
controlled by system controller 112, which loads cache 114 with data
that is

expected to be used soon after the data is placed in cache 114 (i.e., in the near future). Main memory 116 is coupled between system controller 112 and data-path chip 118, and in one embodiment, provides random-access memory of between 16 MB and 128 MB of data. In one embodiment, main memory 116 is provided on SIMMs (Single In-line Memory Modules), while in another embodiment, main memory 116 is provided on DIMMs (Dual In-line Memory Modules), each of which plugs into suitable sockets provided on a motherboard holding many of the other components shown in FIG. 1. Main memory 116 includes standard DRAM (Dynamic Random-Access Memory), EDO (Extended Data Out) DRAM, SDRAM (Synchronous DRAM), or other suitable memory technology. System controller 112 controls **PCI** (Peripheral Component Interconnect) bus 120, a local bus for system 100 that provides a high-speed data path between processor 102 and various peripheral devices, such as graphics devices, storage drives, network cabling, etc. Data-path chip 118 is also controlled by system controller 112 to assist in routing data between main memory 116, host bus 110, and **PCI** bus 120.

DEPR:
In one embodiment, **PCI** bus 120 provides a 32-bit-wide data path that runs at 66 MHZ. In another embodiment, **PCI** bus 120 provides a 64-bit-wide data path that runs at 66 MHZ. In yet other embodiments, **PCI** bus 120 provides 32-bit-wide or 64-bit-wide data paths that runs at higher speeds. In one embodiment, **PCI** bus 120 provides connectivity to I/O bridge 122, graphics controller 127, and one or more **PCI** connectors 121 (i.e., sockets into which a card edge may be inserted), each of which accepts a standard **PCI** card. In one embodiment, I/O bridge 122 and graphics controller 127 are each integrated on the motherboard along with system controller 112, in order to avoid a board-connector-board signal-crossing interface and thus provide better speed and reliability. In the embodiment shown, graphics controller 127 is coupled to a video memory 128 (that includes memory such as DRAM, EDO DRAM, SDRAM, or VRAM (Video Random-Access Memory), and drives VGA (Video Graphics Adaptor) port 129. VGA port 129 can connect to industry-standard monitors such as VGA-type,

SVGA
(Super VGA)-type, XGA-type (eXtended Graphics Adaptor) or SXGA-type
(Super XGA)
display devices. Other input/output (I/O) cards having a **PCI** interface
can be
plugged into **PCI** connectors 121.

DEPR:
The overall function of blocks 460 is to communicate data in the format
of
system 360 to data in the format of computer 100, using the wireless
link
established in blocks 450. Block 451 relays CCITT or similar system
data to
fixed-position connector 361. Block 462 sends this data to modem 220,
which
converts it to RS232 or other baseband format in block 463. Block 464
sends
the baseband data directly through mated **connectors** 227 and 343, so
that base
station 240 can convert it to **wireless** (RF, IR, etc.) format in block
465.
Block 466 transmits this data over a short-distance wireless link to
remote
station 230, where block 467 reconverts it to baseband. Block 468 then
sends
the baseband data via direct connection to computer 100 for processing
in step
469.

DEPR:
Blocks 470 transmit outgoing data from the computer to the telephone or
other
communications system. Computer baseband data processed in block 471
is sent
by block 472 via directly coupled **connectors** of a standard interface to
block
473, where remote station 230 converts it to a **wireless** data format.
Block 474
transmits this FM, IR, or other wireless data to base station 240,
where block
475 converts it back to baseband data such as RS232 format. Block 476
transfers this data directly to wired modem 220 for conversion to a
CCITT or
other system format in block 477. Block 478 couples this data by wired
connection to system 360.

DEPR:
A number of modifications within the scope of the invention will occur
to those
skilled in the art. Some of these have been mentioned in passing:
alternative
data formats for the general types called baseband, **wireless,** and
system or
transport data; alternative **connector** styles for interfacing to the
different

computers, modems, and systems; and other alternatives. One modification in particular is significant. The invention is attractive for some computer networks employing a wired local-area networks (LANs) connected to fixed-position receptacles. Although wireless LANs do exist, the wired types remain less expensive, especially where few of the network users require mobility, or where mobility is restricted to relatively short distances such as within a single room or an area of a factory or a residence. Implementing the invention for use with a wired LAN is straightforward. For example, a conventional wired LAN adapter card connected to **PCI** connector 121, ISA connector 131, or PCMCIA slot 154, FIG. 1, is equivalent to modem 220 in FIG. 2. Instead of producing a modulated CCITT or ISDN data format, however, a LAN adapter card converts data from baseband to a standard LAN format such as ethernet or token-ring, and uses BNC coaxial, RJ45, and other forms of standard **connectors** for the LAN data in place of the RJ11 and similar **connectors** commonly used for telephone system-data This configuration would thus allow the same LAN adapter card to function in either a wired or a **wireless** configuration, and would allow upgrading the LAN card without replacing an entire **wireless** system.

CLPR:
6. A **wireless** adapter for a data-processing system having a computer including a computer interface **connector** for accepting a modem interface **connector** of a wired modem, the modem having a modem telephone-line **connector** for accepting a wire to a telephone-system **connector,** said adapter comprising:

CLPR:
12. A method for adapting to **wireless** operation a data-processing system having a computer normally directly coupled to a wired modem coupled by a wire to a telephone-system **connector,** said method comprising:

CLPV:
a remote station for converting baseband data to and from **wireless** data, including a remote-station interface **connector** mating with said computer interface **connector** for transferring baseband data to and from the computer, and a remote-station antenna for radiating and receiving converted

wireless
data; and

CLPV:
a base station for converting baseband data to and from **wireless** data, including a base-station interface **connector** adapted to mate with said modem
interface **connector** for transferring baseband data to and from the modem, and a
base-station antenna for radiating and receiving converted **wireless** data to and
from said remote station.

CLPW:
a remote-station transceiver for converting baseband data at said remote-station interface **connector to and from wireless** data at said remote-station antenna;

CLPW:
a base-station transceiver for converting baseband data at said base-station
interface **connector to and from wireless** data at said base-station antenna;

DERWENT-ACC-NO: 2000-593612
DERWENT-WEEK: 200056

TITLE: Assembly framework for **housing** multiple circuit boards e.g. **PCI** standard bus boards of computer systems using ramp and track structure top
engage and disengage board-motherboard connectors

INVENTOR: ABRAHAM, R C; CURRAN, V T ; HOYLE, W O ; ST PIERRE, K A

PATENT-ASSIGNEE: LUCENT TECHNOLOGIES INC[LUCE]

PRIORITY-DATA: 1998US-0069026 (April 27, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
US 6115258 A	September 5, 2000	N/A	014	H01R 004/58

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
US 6115258A	N/A	1998US-0069026	April 27, 1998

INT-CL_(IPC): H01R004/58

RELATED-ACC-NO: 1995-022127;1997-099723 ;1999-253289

ABSTRACTED-PUB-NO: US 6115258A

BASIC-ABSTRACT: NOVELTY - The front of the upper edge (162) of the framework
(159) includes a removable projecting stop (180) formed integrally with the
upper edge. The stop has sufficient clearance to enable board to pass over it
upon insertion and removal from the portion.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of
housing multiple circuit boards, a rack-mounted chassis.

USE - For **housing** multiple circuit boards e.g. **PCI** standard bus boards of
computer systems.

ADVANTAGE - It facilitates ready installation and removal of circuit boards
from the chassis.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a framework

and an attached circuit board for the chassis system.

Framework 159

Upper Edge 162

Projecting Stop 180

CHOSEN-DRAWING: Dwg.3/8

TITLE-TERMS:
ASSEMBLE FRAMEWORK HOUSING MULTIPLE CIRCUIT BOARD STANDARD BUS BOARD COMPUTER
SYSTEM RAMP TRACK STRUCTURE TOP ENGAGE DISENGAGE BOARD CONNECT

DERWENT-CLASS: T01 V04

EPI-CODES: T01-L02B; V04-A09; V04-S09; V04-T02;

SECONDARY-ACC-NO:
Non-CPI Secondary Accession Numbers: N2000-439572

L Number	Hits	Search Text	DB	Time stamp
1	37	housing$1 with pci	USPAT; US-PGPUB	2002/03/10 18:47
4	0	(mini or miniature) same (housing$1 with pci)	USPAT; US-PGPUB	2002/03/10 18:47
7	9	housing$1 with pci	EPO; JPO; DERWENT; IBM_TDB	2002/03/10 18:53
12	0	(mini or miniature) with (housing$1 with pci)	EPO; JPO; DERWENT; IBM_TDB	2002/03/10 18:54

US-PAT-NO: 6349098
DOCUMENT-IDENTIFIER: US 6349098 B1

TITLE: Method and apparatus for forming a virtual circuit

DATE-ISSUED: February 19, 2002

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Parruck; Bidyut	Milpitas	CA	N/A	N/A
Dharmapurikar; Makarand	San Jose	CA	N/A	N/A
Joshi; Uday Govind	Malad	N/A	N/A	INX

US-CL-CURRENT: 370/395.4

ABSTRACT:
An improved method and apparatus for automatically forming a virtual circuit in an ATM switch is disclosed. In one aspect of the invention, the virtual circuit may be used to transport an ATM data cell included in an associated communication session. The disclosed method includes the following operative steps. First, a configuration cell is created. Next the virtual circuit is formed by passing the configuration cell to a destination node by way of at least one connective node. The configuration cell updates and validates an associated connection table capable of defining a virtual link. The virtual link being part of the virtual circuit.

11 Claims, 14 Drawing figures
Exemplary Claim Number: 1
Number of Drawing Sheets: 14

---------- KWIC ---------

DEPR:
SU 600 includes a switch matrix 603 having a plurality of first and second nodes (not shown) selectively coupled as directed by a switch processor 602 so as to form a virtual link 800b by which ATM cells may be bi-directionally transported through SU 600. Virtual link 800b may be combined with a virtual link 800a and a virtual link 800c to form virtual circuit 800 thereby providing an appropriate path for the transport of call related ATM cells from InPORT

410(p) to OutPORT 510(p). It should be noted that InPORT processor 416, switch processor 602 and an OutPORT processor 516 included within OutPORT 510(p) are coupled by way of a processor bus 601. In the described embodiment, device 201 may be coupled to InPORT 410(p) by way of a connector 205 and, in a similar manner, device 331 may be coupled to OutPORT 510(p) by way of a connector 335. **Connectors** 205 and 335 may be copper wires, fiber optics, **wireless** transmission medium, and the like.

DEPR:
In another embodiment, processor 416 is coupled to a **PCI** configuration cell insertion unit 456 which is capable of receiving the configuration cell as created by processor 416. An output of **PCI** configuration cell insertion unit 456 forms a second input to multiplexer 458 having its output coupled to configuration cell handler 460.

DEPR:
Once CRC has been received by and queued in table lookup device 450, the VCI, VPI parameters included in CRC are used as pointers by which the appropriate routing parameters (VP,VC) stored in look up table memory device 452 are retrieved. Configuration cell translator 454 then forms CSC by combining the retrieved routing parameters (VP, VC) and the QoS parameters associated with virtual circuit 800 included in CRC. In another embodiment, InPORT processor 416 may be coupled to **PCI** interface 456 wherein CSC is formed.